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10/031,533	04/16/2002	Jyrki Kaitila	297-010818-US(PAR)	6226

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EXAMINER

SUMMONS, BARBARA

ART UNIT

PAPER NUMBER

2817

DATE MAILED: 06/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/031,533

Applicant(s)

Kaitila et al.

Examiner

Barbara Summons

Group Art Unit

2817

— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 (three) MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- ☒ Responsive to communication(s) filed on 1/17/02 (Pre-Armedt)
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-12 is/are pending in the application.
- Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-5 and 7-12 is/are rejected.
- ☒ Claim(s) 6 is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☒ All ☐ Some* ☐ None of the:
- ☐ Certified copies of the priority documents have been received.
- ☐ Certified copies of the priority documents have been received in Application No. _____
- ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____

Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s) 348
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other _____

Office Action Summary

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DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

2. Claims 1-5 and 7-12 are rejected under 35 U.S.C. § 102(e) as being anticipated by Cushman et al. U.S. 6,150,703.

Regarding claims 1-5, Figs. 1 and 4A of Cushman et al. disclose a resonator structure 20 (Fig. 1) comprising two conductor layers 26 and 28 and a piezoelectric layer 24 therebetween, the conductor layers and piezoelectric layer extending over a first area of the resonator structure, which first area is a piezoelectrically excitable area of the resonator structure, characterized in that: the resonator structure is arranged to have a zone at the edge of the electrodes (i.e. inside dashed lines in Fig. 4A), which confines a center area within the first area of the resonator; and the layer structure in the zone is arranged to be such that piezoelectrically excited vibrations are dampened more effectively in the zone than in the center area (see e.g. Fig. 4A; col. 1, ln. 65 to col. 2, ln. 5; and col. 3, ln. 57 to col. 4, ln. 7) due to the addition of an acoustic damping

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polyimide layer (col. 4, lns. 8-9) in the zone and not in the center of the resonator. That is, as seen in Fig. 4A, the polyimide damping layer is formed only on the edges of the electrodes and has an opening in the center area of the resonator.

Regarding claims 7, 9 and 10, because the zone (inside the dashed lines in Fig. 4A) extends over the outside edges of the electrode 26 (Fig. 1), it extends at least over part of the piezoelectric layer 24 that is not within the first area (i.e. where the top and bottom electrodes overlap) such that the zone is at least partly outside the first area, and the zone substantially confines the first area.

Regarding claim 8, the zone is considered to be the area between the inside dashed line and the outer edge of the electrode, and this zone is within the first area.

Regarding claim 11, Cushman et al. further discloses that its resonator structure with damping material is applicable to stacked resonators having two piezoelectric layers with a conductor layer therebetween (see col. 1, lns. 10-21 and especially lns. 43-45).

Regarding claim 12, Cushman et al. further discloses its resonator structure to be in a filter (see col. 1, lns. 20-23 and especially Fig. 8 which shows the filter passband of the resonator structure with polyimide damping layer).

Allowable Subject Matter

3. Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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4. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record does not disclose or fairly suggest a resonator structure having each of the specifically recited features and especially having a layer for damping vibrations placed "between one of the conductor layers and the piezoelectric layer". Cushman et al. discloses that the damping material is to be "applied to an edge of... (the) electrode" (see col. 4, lns. 10-12), thereby indicating that the electrode has already been formed such that the damping layer could not be provided between the electrode conductor and the piezoelectric.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Nakatani JP 59-67712 discloses (see Fig. 3) a resonator structure with two electrodes 2 and 3 with a piezoelectric layer 1 therebetween and a damping layer 4 with an opening 5 in the center area thereof.

6. Any inquiry concerning this communication should be directed to Barbara Summons at telephone number (703) 308-4947, FAX no. (703) 308-7724, receptionist's no. (703) 308-0956, Supervisory Examiner Bob Pascal (703) 308-4909.



Barbara Summons
Primary Examiner
Art Unit 2817

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June 10, 2003